

CLAIMS

What is claimed is:

1. A clamping mechanism for a clamping unit of an injection molding machine, comprising:

a drive unit for moving a first platen in linear direction in relation to a fixed second platen, said drive unit being so linked to the first platen as to be able to carry out a limited movement;

a force-application unit for building up a clamping force, when the first platen assumes a closing position; and

a locking device, disposed between the force application unit and the first platen, for transmitting the clamping force, said locking device including a screw mechanism operating in synchronism with the drive unit and having a screw shaft and a locking nut constructed to normally connect with clearance to the screw shaft via a thread connection and to interact with the screw shaft for transmitting a load, when the clamping force is applied, whereby the threaded connection is forced to self-lock and to act free of clearance to thereby secure the locking nut on the screw shaft and prevent reverse rotation of the locking nut.
2. The clamping mechanism of claim 1, wherein the drive unit includes a spring assembly having a preset spring tension in correspondence to a stroke force applied by the drive unit, for linking the drive unit to the first platen for limited movement.

3. The clamping mechanism of claim 2, wherein the spring assembly includes a disk spring.
4. The clamping mechanism of claim 2, wherein the spring assembly of the drive unit is constructed as torsionally yielding coupling.
5. The clamping mechanism of claim 1, wherein the locking nut is rotatably driven, and the screw shaft is constrained against rotation.
6. The clamping mechanism of claim 5, wherein the screw mechanism includes a plurality of said rotatable locking nut disposed in parallel relationship and extending through the first platen, and a plurality of said non-rotatable screw shaft, wherein the locking nuts and the screw shafts are placed into one-to-one correspondence.
7. The clamping mechanism of claim 1, wherein the drive unit is constructed as screw mechanism.
8. The clamping mechanism of claim 7, wherein the drive unit is constructed as ball screw mechanism.

9. The clamping mechanism of claim 7, wherein the screw shaft of the screw mechanism is also part of the drive unit and cooperates substantially without clearance with a screw nut for implementing a displacement.
10. The clamping mechanism of claim 9, wherein the screw shaft is double-threaded with a first thread for the screw nut and second thread for the locking nut.
11. The clamping mechanism of claim 1, wherein the drive unit is constructed as rack-and-pinion drive.
12. The clamping mechanism of claim 1, wherein the drive unit is constructed as hydraulic drive, said screw mechanism being driven by the drive unit through intervention of a mechanical stroke or torque converter.